

**AMENDMENTS TO THE CLAIMS:**

1. (Cancelled)

2. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to restrict ~~means for restricting the~~ an effective word length of a digital value of respective an input signals ~~signal~~;

an interference-signal estimation circuit operable to estimate ~~means for estimating the~~ interference signals included in the input signals in accordance with the input ~~signal~~ signals whose effective word length is restricted;

an interference-signal extraction circuit operable to extract ~~means for extracting the~~ interference signals include in the input signals in accordance with an estimation result by the interference-signal estimation circuit ~~means~~; and

an interference-signal removal circuit operable to remove ~~means for removing the~~ extracted interference signals from the input signals.

3. (Currently Amended) The interference-signal removing apparatus according to claim 2, wherein

the interference-signal extraction circuit ~~means~~ extracts the interference signals from the input signals whose effective word lengths are restricted.

4. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to add ~~means for adding~~ noises to the input signals;

an interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the input signals to which noises are added;

an interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with an estimation result by the interference-signal estimation circuit ~~means~~; and

an interference-signal removal circuit operable to remove ~~means for removing~~ the extracted interference signals from the input signals.

5. (Currently Amended) The interference-signal removing apparatus according to claim 4, wherein

the interference-signal extraction circuit ~~means~~ extracts the interference signals from the input signals to which noises are added.

6. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to multiply ~~means for multiplying~~ the input signals by a control coefficient of less than 1;

an interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the input signals that are multiplied by the control coefficient;

an interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with an estimation result by the interference-signal estimation circuit ~~means~~; and

an interference-signal removal circuit operable to remove ~~means for removing~~ the extracted interference signals from the input signals.

7. (Currently Amended) The interference-signal removing apparatus according to claim 6, wherein

the interference-signal extraction circuit ~~means~~ extracts the interference signals from the input signals multiplied by [[a]] the control coefficient.

8. (Currently Amended) The interference-signal removing apparatus according to claim 2, wherein

the input-signal control circuit comprises an ~~means~~ interference-signal-level estimation circuit operable to estimate ~~means for estimating~~ levels of the interference signals included in the input signals, and operable to control the ~~and controls~~ input signals in accordance with estimated interference-signal levels.

9. (Currently Amended) The interference-signal removing apparatus according to claim 4, wherein

the input-signal control circuit comprises an ~~means~~ interference-signal-level estimation circuit operable to estimate ~~means for estimating~~ levels of the interference signals included in the input signals, and operable to control the ~~and controls~~ input signals in accordance with estimated interference-signal levels.

10. (Currently Amended) The interference-signal removing apparatus according to claim 6, wherein

the input-signal control circuit comprises an ~~means~~ interference-signal-level estimation circuit operable to estimate ~~means for estimating~~ levels of the interference signals included in the input signals, and operable to control the ~~controls~~ input signals in accordance with estimated interference-signal levels.

11. (Cancelled)

12. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus ~~includes~~ comprises:

an input-signal control circuit operable to restrict ~~means for restricting the~~ an effective word length of a digital value of respective ~~an~~ input ~~signal~~ signals[[,]];

an interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the input ~~signal~~ signals whose effective word length is restricted[[,]];

an interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation ~~means~~ circuit[[,]] and

an interference-signal removal circuit operable to remove ~~means for removing the~~ extracted interference signals from the input signals.

13. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus ~~means~~ includes comprises:

an input-signal control circuit operable to add ~~means for adding~~ noises to the input signals[[,]];

an interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the noise-added input signals[[,]];

an interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation ~~means~~ circuit[[,]] and

an interference-signal removal circuit operable to remove ~~means for removing~~ the extracted interference signals from the input signals.

14. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals

to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus ~~includes~~ comprises:

an input-signal ~~inputs-signal~~ control circuit operable to multiply ~~means for~~  
~~multiplying~~ the input signals by a control coefficient of less than 1[[,]];

an interference-signal estimation circuit operable to estimate ~~means for estimating~~  
the interference signals included in the input signals in accordance with the input signals  
multiplied by the control coefficient[[,]];

an interference-signal extraction circuit operable to extract ~~means for extracting~~  
the interference signals included in the input signals in accordance with estimation results  
by the interference-signal estimation ~~means~~ circuit[[,]] and

an interference-signal removal circuit operable to remove ~~means for removing~~ the  
extracted interference signals from the input signals.

15. (Cancelled)

16. (Currently Amended) A diversity reception system ~~having~~ comprising:

an interference-signal removing apparatus for removing narrow-band interference signals  
from input signals including wide-band desired signals and the narrow-band interference signals  
on at least one branch to make it possible to supply a signal of the at least one branch to the

interference-signal removing apparatus and remove the interference signals included in the signal by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus ~~includes~~ comprises:

an input-signal control circuit operable to restrict ~~means for restricting the~~ an effective word length of a digital value of ~~an~~ respective input ~~signal~~ signals; [[,]]

an interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the input ~~signal~~ signals whose effective word length is restricted; [[,]]

an interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation ~~means~~ circuit; [[,]] and

an interference-signal removal circuit operable to remove ~~means for removing the~~ extracted interference signals from the input signals.

17. (Currently Amended) A diversity reception system ~~having~~ comprising:

an interference-signal removing apparatus ~~for removing~~ operable to remove narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals on at least one branch to make it possible to supply a signal of the at least one branch to the interference-signal removing apparatus and remove the interference signals included in the signal by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus ~~means includes~~ comprises:



~~an~~ input-signal control circuit operable to add ~~means for adding~~ noises to the input signals; [[,]]

~~an~~ interference-signal estimation circuit operable to estimate ~~means for estimating~~ the interference signals included in the input signals in accordance with the noise-added input signals; [[,]]

~~an~~ interference-signal extraction circuit operable to extract ~~means for extracting~~ the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation ~~means~~ circuit; [[,]] and

~~an~~ interference-signal removal circuit operable to remove ~~means for removing~~ the extracted interference signals from the input signals.

18. (Currently Amended) A diversity reception system ~~having~~ comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals on at least one branch to make it possible to supply a signal of the at least one branch to the interference-signal removing apparatus and remove the interference signals included in the signal by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus ~~includes~~ comprises:

~~an input-signal~~ ~~inputs-signal~~ control circuit operable to multiply ~~means for~~ ~~multiplying~~ the input signals by a control coefficient of less than 1; [[,]]

an interference-signal estimation circuit operable to estimate ~~means for estimating~~  
the interference signals included in the input signals in accordance with the input signals  
multiplied by the control coefficient; [[,]]

an interference-signal extraction circuit operable to extract ~~means for extracting~~  
the interference signals included in the input signals in accordance with estimation results  
by the interference-signal estimation ~~means~~ circuit; [[,]] and

an interference-signal removal circuit operable to remove ~~means for removing~~ the  
extracted interference signals from the input signals.